

What is claimed is:

1. A population of insulin-producing cells made by a process comprising contacting non-insulin producing cells with a growth factor selected from the group consisting of GLP-1, growth factors having amino acid sequences substantially homologous to GLP-1, and fragments thereof.
2. The population of claim 1, wherein the non-insulin producing cells are contacted with the growth factor *in vitro*.
3. The population of claim 1, wherein the non-insulin producing cells are contacted with the growth factor *in vivo*.
4. The population of claim 1, wherein the non-insulin producing cells comprise non-islet cells.
5. The population of claim 1, wherein the non-insulin producing cells comprise pancreatic cells.
6. The population of claim 1, wherein the non-insulin producing cells comprise pancreatic acinar cells.
7. The population of claim 1, wherein the non-insulin producing cells comprise stem cells.
8. The population of claim 1, wherein the non-insulin producing cells comprise pancreatic stem cells.

09762538.071901

Sub A2

9. The population of claim 1, wherein the non-insulin producing cells are mammalian cells.
10. The population of claim 9, wherein the mammalian cells are human cells.
11. The population of claim 1, wherein the noninsulin-producing cells are contacted with the growth factor for at least twenty-four hours.
12. A population of insulin-producing cells made by a process comprising contacting noninsulin-producing cells with a growth factor selected from the group consisting of Exendin-4, growth factors having amino acid sequences substantially homologous to Exendin-4, or fragments thereof.
13. The population of claim 12, wherein the non-insulin producing cells are contacted with the growth factor *in vitro*.
14. The population of claim 12, wherein the non-insulin producing cells are contacted with the growth factor *in vivo*.
15. The population of claim 12, wherein the non-insulin producing cells comprise non-islet cells.
16. The population of claim 12, wherein the non-insulin producing cells comprise pancreatic cells.

Sub
A
2
cont.

09762538.071901

17. The population of claim 12, wherein the non-insulin producing cells comprise pancreatic acinar cells.
18. The population of claim 12, wherein the non-insulin producing cells comprise stem cells.
19. The population of claim 12, wherein the non-insulin producing cells comprise pancreatic stem cells.
20. The population of claim 12, wherein the non-insulin producing cells are mammalian cells.
21. The population of claim 20, wherein the mammalian cells are human cells.
22. The population of claim 1, wherein the noninsulin-producing cells are contacted with the growth factor for at least twenty-four hours.
23. A method of differentiating non-insulin producing cells into insulin producing cells, comprising contacting the non-insulin producing cells with a growth factor selected from the group consisting of GLP-1, growth factors having amino acid sequences substantially homologous to GLP-1, and fragments thereof.
24. The method of claim 23, wherein the non-insulin producing cells are contacted with the growth factor for at least twenty-four hours.

Sub
A₂
conf

09762538.071901

25. The method of claim 23, wherein the non-insulin producing cells are contacted with the growth factor *in vitro*.
26. The method of claim 23, wherein the non-insulin producing cells are contacted with the growth factor *in vivo*.
27. A method of differentiating non-insulin producing cells into insulin producing cells, comprising contacting the non-insulin producing cells with a growth factor selected from the group consisting of Exendin-4, growth factors having amino acid sequences substantially homologous to Exendin-4, or fragments thereof.
28. The method of claim 27, wherein the non-insulin producing cells are contacted with the growth factor for at least twenty-four hours.
29. The method of claim 27, wherein the non-insulin producing cells are contacted with the growth factor *in vitro*.
30. The method of claim 27, wherein the non-insulin producing cells are contacted with the growth factor *in vivo*.
31. A method of enriching a population of cells for insulin-producing cells, comprising contacting the population of cells with a growth factor that differentiates noninsulin-producing cells into insulin-producing cells.
32. A method of promoting pancreatic amylase producing cells to produce both insulin and amylase, comprising contacting the pancreatic amylase producing cells with a growth factor selected from the group consisting

09762538.071901

Sub A2
cent.

of GLP-1, growth factors having amino acid sequences substantially homologous to GLP-1, and fragments thereof.

33. A method of promoting pancreatic amylase producing cells to produce both insulin and amylase, comprising contacting the pancreatic amylase producing cells with a growth factor selected from the group consisting of Exendin-4, growth factors having amino acid sequences substantially homologous to Exendin-4, and fragments thereof.

34. A method of treating diabetes in a subject diagnosed with Type 1 diabetes, comprising administering to the subject a growth factor selected from the group consisting of GLP-1, growth factors having amino acid sequences substantially homologous to GLP-1, and fragments thereof by continuous infusion for at least twenty-four hours.

35. The method of claims 34, wherein the growth factor differentiates non-insulin producing cells into insulin producing cells.

36. A method of treating diabetes in a subject diagnosed with Type 1 diabetes, comprising administering to the subject a growth factor selected from the group consisting of Exendin-4, growth factors having amino acid sequences substantially homologous to Exendin-4, and fragments thereof.

37. The method of claim 36, wherein the growth factor is administered by bolus at least once.

Sub A2
cont.

09762538.071901

38. The method of claims 36, wherein the growth factor differentiates non-insulin producing cells into insulin producing cells.
39. A method of treating diabetes in a subject, comprising
- (a) obtaining non-insulin producing cells from the subject being treated;
 - (b) contacting the non-insulin producing cells with a growth factor, thereby differentiating non-insulin producing cells into insulin-producing cells; and
 - (c) administering the insulin-producing cells from step (b) to the diabetic subject.
40. The method of claim 39, wherein the non-insulin producing cells are pancreatic cells.
41. The method of claim 39, wherein the non-insulin producing cells are stem cells.
42. A method of treating diabetes in a subject, comprising
- (a) obtaining non-insulin producing cells from the subject being treated;
 - (b) contacting the non-insulin producing cells with a growth factor, thereby differentiating non-insulin producing cells into insulin producing cells;
 - (c) altering the surface antigens of the insulin producing cells of step (b), thereby reducing the likelihood that the insulin producing cells will cause an immune response; and

Sub A2
sent

09762538.071901

(d) administering the cells with altered surface antigens from step (c) to the diabetic subject.

43. The method of claim 42, wherein the non-insulin producing cells are pancreatic cells.

44. The method of claim 42, wherein the non-insulin producing cells are stem cells.

45. A method of treating diabetes in a subject, comprising

- (a) obtaining non-insulin producing cells from a donor;
- (b) contacting the non-insulin producing cells with a growth factor, thereby differentiating non-insulin producing cells into insulin producing cells; and
- (c) administering the insulin producing cells from step (b) to the diabetic subject.

46. The method of claim 45, wherein the donor is a cadaver.

47. The method of claim 45, where the non-insulin producing cells are pancreatic cells.

48. The method of claim 45, wherein the non-insulin producing cells are stem cells.

49. A method of treating diabetes in a subject, comprising

0976538.071901

Sub A2
cont.

- Sub A2
cont. 1
- (a) obtaining non-insulin producing cells from a donor;
 - (b) contacting the non-insulin producing cells with a growth factor, thereby differentiating non-insulin producing cells into insulin producing cells;
 - (c) altering the surface antigens of the insulin producing cells, thereby reducing the likelihood of that the insulin producing cells will cause an immune response; and
 - (d) administering the cells with altered surface antigens from step (c) to the diabetic subject.

50. The method of claim 49, wherein the donor is a cadaver.
51. The method of claims 49, wherein the non-insulin producing cells are pancreatic cells.
52. The method of claim 49, wherein the non-insulin producing cells are stem cells.

09/06/99 07:19:01